CLAIMS:

1.(AMENDED) A concentration device using magnetic particles comprising:

a liquid suction passage in which liquid can pass through only in a suction direction;

a liquid discharge passage in which liquid can pass through only in a discharge direction;

magnetic force means which can exert a magnetic field from outside of the liquid passage on at least one liquid passage thereof or remove the magnetic field, and which can separate magnetic particles having directly or indirectly captured a target substance suspended in the liquid by having the magnetic particles adhere to the inner wall of the liquid passage;

a storage section communicated with each liquid passage, for storing the sucked liquid; and

pressure adjustment means for sucking and discharging the liquid by adjusting the pressure in the storage section,

wherein said storage section is provided detachably with respect to said pressure adjustment means, and a liquid whose volume is larger than the maximum volume capable of being sucked into or discharged from the storage section at the time of only either suction or discharge, is continually passed through the storage section, so that the magnetic particles are separated.

2. A concentration device using magnetic particles according to claim 1, wherein said liquid suction passage and said liquid discharge passage are provided in parallel to each other with a space, so as to protrude downward below said storage section, with said pressure adjustment means provided above said storage section.

3. A concentration device using magnetic particles according to either one of claim 1 and claim 2, wherein said liquid suction passage and said liquid discharge passage are formed substantially in a two-stage form with a tip portion having a small diameter and a

large-diameter portion, respectively.

4. A concentration device using magnetic particles according to any one of claim 1 to claim 3, wherein said magnetic force means is obtained by providing a permanent magnet, an electromagnet or a magnetic substance outside of at least one of said liquid passages.

5. A concentration device using magnetic particles according to any one of claim 1 to

claim 4, wherein said storage section has a cylinder, and said pressure adjustment means has a plunger inserted into said cylinder so as to slide therein.

6. A concentration device using magnetic particles according to any one of claim 1 to claim 5, wherein said pressure adjustment means has an air flow path provided in said storage section, and a pump for performing suction and discharge of a gas in said storage section via said air flow path.

7.(DELETED)

8.(AMENDED) A concentration device using magnetic particles according to claim 1, wherein when said storage section is detached, said pressure adjustment means can be mounted with one pipette tip, in which the liquid can pass through both in the suction direction and the discharge direction.

9. A concentration device using magnetic particles according to any one of claim 1 to claim 8, wherein hydroxyapatite is sintered and secured to said magnetic particles, and the pH of the solution containing the magnetic particles suspended therein is adjusted to change the hydroxyapatite to a sol form or a gel form, to thereby make the hydroxyapatite capture or alienate the target substance.

10.(AMENDED) A concentration device using magnetic particles comprising:

a liquid passage having a suction port and a discharge port, in which liquid can pass therethrough;

magnetic force means which can exert a magnetic field from outside of the liquid passage to inside of a part of the liquid passage, which can separate magnetic particles having directly or indirectly captured a target substance suspended in the liquid, by having the magnetic particles adhere to an inner wall of the part of the liquid passage; and

a pump provided in the liquid passage, for transferring the liquid along a transfer direction of the liquid in the liquid passage,

Wherein at least the part of the liquid passage is provided so as to be able to be taken out, while attracting the separated magnetic particles.

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11. A concentration device using magnetic particles according to claim 10, wherein a switchover mechanism for switching over the liquid passage in order to re-suspend and discharge the separated magnetic particles is provided in the middle of the liquid passage.

12.(DELETED)

13.(AMENDED) A concentration device using magnetic particles according to any one of claim 10 to claim 11, wherein hydroxyapatite is sintered and secured to the magnetic particles, and the pH of the solution containing the magnetic particles suspended therein is adjusted to change the hydroxyapatite to a sol form or a gel form, to thereby make the hydroxyapatite capture or alienate the target substance.

14. A concentration system using magnetic particles comprising:

the concentration device according to any one of claim 1 to claim 13;

shift means capable of shifting the concentration device itself and/or a container mounted outside of the concentration device; and

control means for controlling the operation of the liquid drive means, the magnetic force means and/or the shift means.

15. A concentration system using magnetic particles according to claim 14: wherein said container has two tanks into which the suction port of the liquid passage and the discharge port of the liquid passage are respectively inserted, a thickness of a partition section for separating the two tanks being formed thinner than a distance between the suction port and the discharge port, and a bottom portion of each liquid receiving section has a slope of downward inclination toward the partition section.

16. A concentration system using magnetic particles according to claim 14, wherein said control means controls so as to suck from a container storing a first volume of suspension, in which the magnetic particles having directly or indirectly captured the target substance are suspended, and pass the suspension through the liquid passage, with the

magnetic force means exerting a magnetic field from outside to the liquid passage, to thereby attract the magnetic particles to the inner wall of the liquid passage and separate the magnetic particles,

and so as to insert said suction port and said discharge port into a container where a second volume of liquid is stored, the second volume being smaller than said first volume, and suck and discharge the second volume of liquid to effect re-suspension to thereby increase the concentration of the suspension containing the target substance such as bacteria suspended therein, without exerting the magnetic field by the magnetic force means.

17. (AMENDED) A concentration method using magnetic particles comprising:

a capture step for capturing a target substance such as bacteria in a suspension directly or indirectly by magnetic particles;

a separation step for separating the magnetic particles by exerting a magnetic field from outside of a liquid passage, at least a part of which is provided so as to be able to be taken out from the other part thereof, to the inside of the liquid passage to thereby attract the magnetic particles to an inner wall of the passage, at a time of passing a suspension having a first volume and in which the magnetic particles which have captured the target substance are suspended, through the liquid passage;

a re-suspension step for re-suspending the magnetic particles which have captured the target substance in the liquid, by passing a liquid having a second volume smaller than the first volume through the liquid passage in with the magnetic particles which have captured the target substance have been separated, in a state with the magnetic field not exerted on the liquid passage; and

an elution step for eluting the target substance from the magnetic particles which have captured the target substance suspended in the liquid, and separating only the magnetic particles to obtain a suspension in which the target substance is concentrated.

18. A concentration method using magnetic particles according to claim 17 wherein;

said separation step effects separation by sucking the suspension from a container

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storing a first volume of suspension, in which the magnetic particles having directly or

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indirectly captured the target substance are suspended, and passing the suspension through the liquid passage, with the magnetic field exerted from outside of the liquid passage, to thereby attract the magnetic particles to the inner wall of each liquid passage; and

said re-suspension step effects re-suspension by sucking and discharging a second volume of liquid to the container where the second volume of liquid is stored, the second volume being smaller than the first volume, without exerting the magnetic field by the magnetic force means.

19. A concentration method using magnetic particles according to either one of claim 17 and claim 18 wherein;

said separation means effects separation by sucking the suspension from a container storing a first volume of suspension in which the magnetic particles which have captured the target substance are suspended, to a storage section via said liquid suction passage, with the magnetic field exerted from outside to said liquid suction passage and said liquid discharge passage by said magnetic force means, and discharging the suspension from said storage section via said liquid discharge passage, to thereby attract the magnetic particles to the inner wall of each liquid passage; and

said re-suspension step effects re-suspension by inserting said liquid suction passage and said liquid discharge passage into a container where the second volume of liquid is stored, the second volume being smaller than the first volume and substantially the same amount as that of the storage section, to thereby suck and discharge the second volume of liquid, without exerting a magnetic field by said magnetic force means.

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20. A concentration method using magnetic particles according to any one of claim 17 to claim 19 wherein, in a container storing the suspension re-suspended in the re-suspension step, the magnetic particles in the suspension are separated and then re-suspended in a liquid having a third volume smaller than the second volume, by sucking and discharging the suspension, with a magnetic field exerted on the liquid passage, by means of a pipette apparatus having a liquid passage in which liquid can pass through both in the suction

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direction and the discharge direction of the liquid, and a storage section communicated with the passage and having a capacity smaller than the second volume, and also having magnetic force means for exerting and removing a magnetic field to/from the liquid passage from outside of the liquid passage.

21. A concentration method using magnetic particles according to any one of claim 17 to claim 20, wherein said separation step shifts all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via the liquid passage, and discharging the liquid to the first container via the liquid passage, with a magnetic field exerted on the liquid passage from outside.

22. A concentration method using magnetic particles according to any one of claim 17 to claim 21, wherein said separation step shifts all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via a liquid suction passage, and discharging the liquid to the first container via a liquid discharge passage, with a magnetic field exerted on the liquid suction passage and a liquid discharge passage from outside.

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